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Microcystis in Lakes Mead and Mohave: Winter 2014 - 2015

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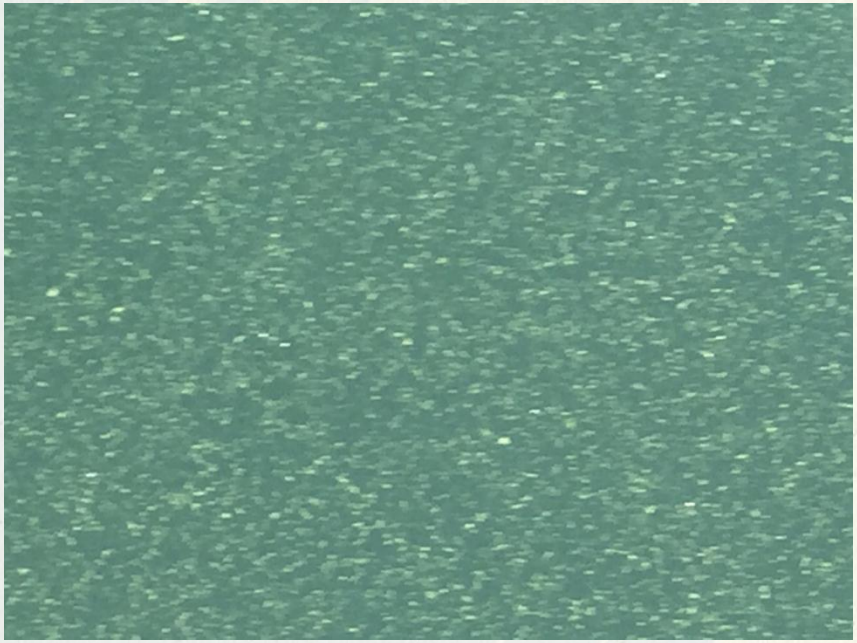
So what is going on…

- Microcystis has usually (for the past several years at least) appeared during the late summer, peaked in the fall, and decreased during the winter.
  - This makes sense
    - Late summer, high temperatures and “low” wind favor cyanobacterial growth
    - Microcystis decreased during the winter as the water temperatures decreased and the water column began to mix.

- This year the Microcystis did not disappear, and has been seen in “high” concentrations in both Lakes Mead and Mohave, in a variety of locations
  - Boulder Basin
  - Las Vegas Bay
  - Overton Arm
  - “”Lower” Lake Mohave

CR346.4 This week

Close-up



From the Boat

What are we worried about?

- Lake Erie and the Toledo Water Supply
- *Microcystis* can produce microcystin
  - Microcystin is a hepatotoxin that can impact the liver
    - Can get sick from contact or ingestion
    - Can be fatal to pets and livestock drinking/ingesting the toxin

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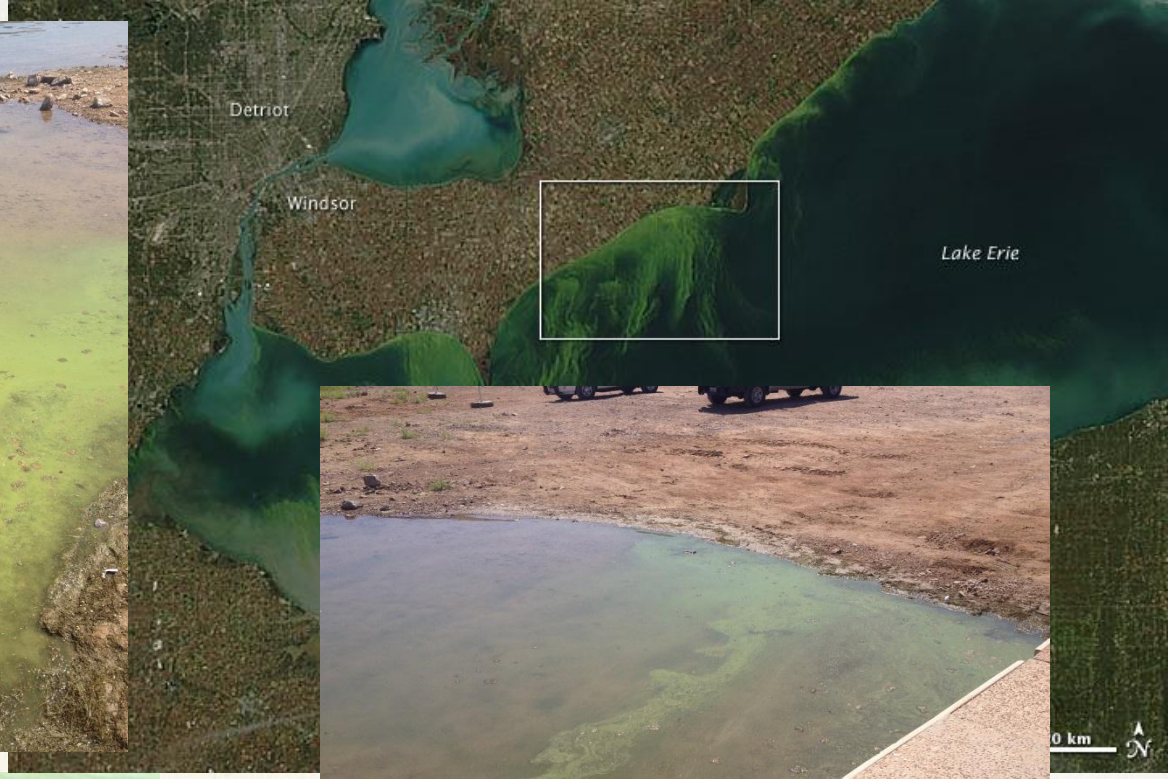

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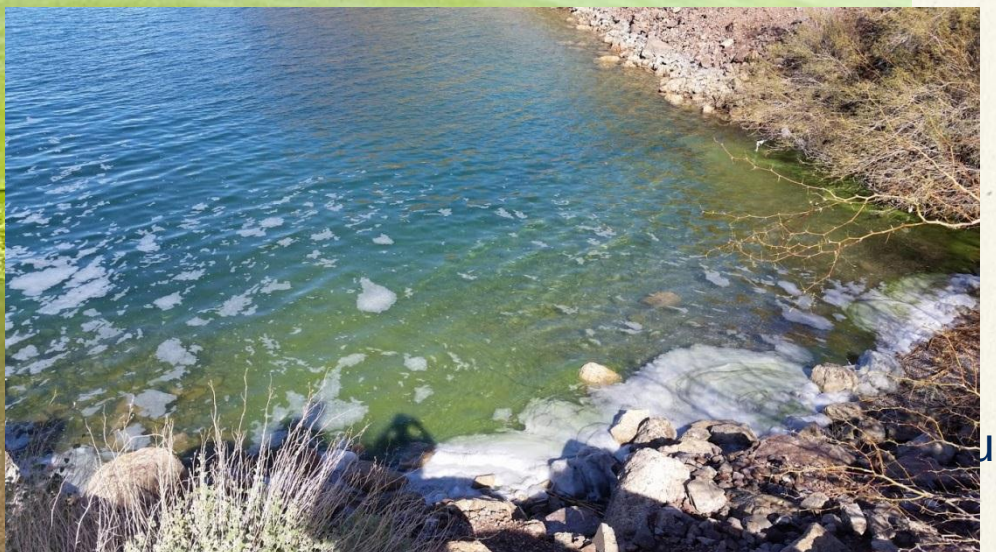

uld induce stress, but not really a

Microcystis species (of interest)

Microcystis wesenbergii

Microcystis aeruginosa

Issues we face

- Identification of the species present each sampling
  - M wesenbergii: Not a big deal
  - M aeruginosa: A potential risk
  - We need to sample an active, abundant population to ensure correct identification of the species
    - Or switch to a genetic test
  - Then we need to hope the species does not switch
- Quantification of microcystin
  - ELISA
    - All results negative in the past
      - Some reluctance to continue in light of negative results
    - Results semi-quantitative
  - Analytical chemistry
    - Methods have been “developed” for SNWA R&D lab
    - Low detection limits, “high” cost, intensive
  - Intracellular or Extracellular?

What do we do?

- **KEEP YOUR EYES OPEN**
  - Look for surface streaks of Microcystis
    - At the surface it is susceptible to being pushed together by the wind
  - Look for mini algal blooms on the downwind shoreline
  - Look at zooplankton samples visually
    - Blue-green tint, “oily” surface scum after settling
    - DO NOT USE FOR QUANTIFICATION
  - Pay special attention to Las Vegas Bay locations
    - ons may be higher

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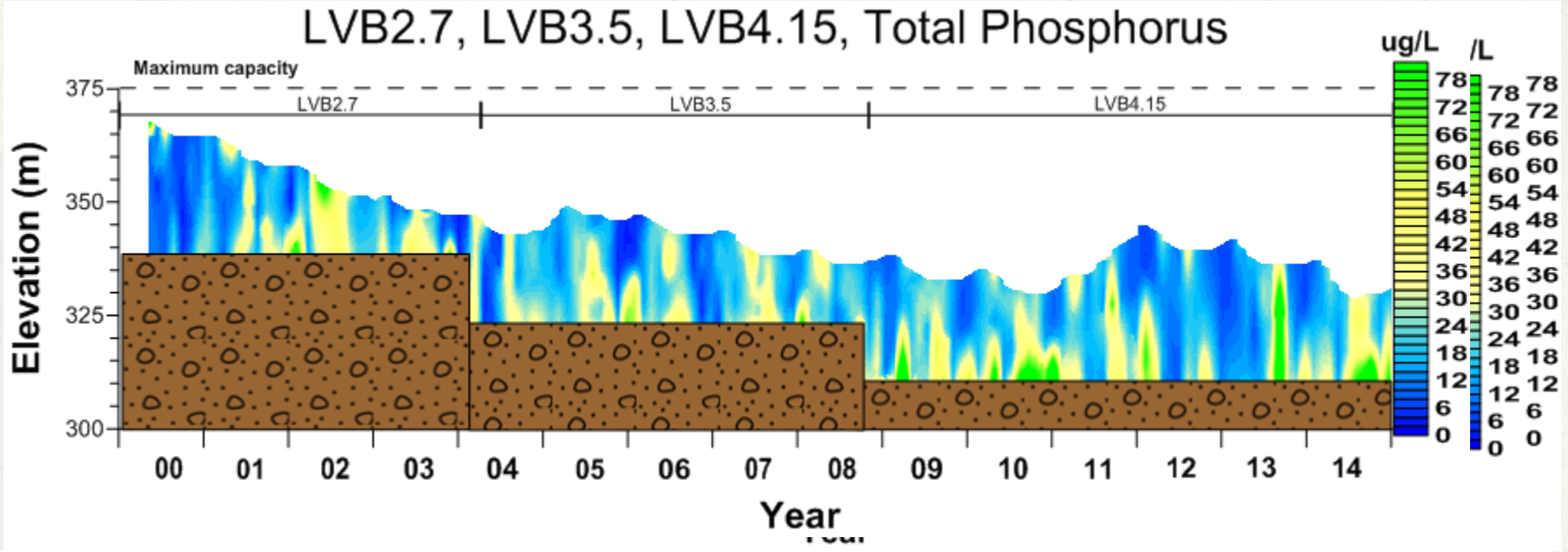
LVB2.7, LVB3.5, LVB4.15, Total Phosphorus
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LVB3.5
LVB4.15
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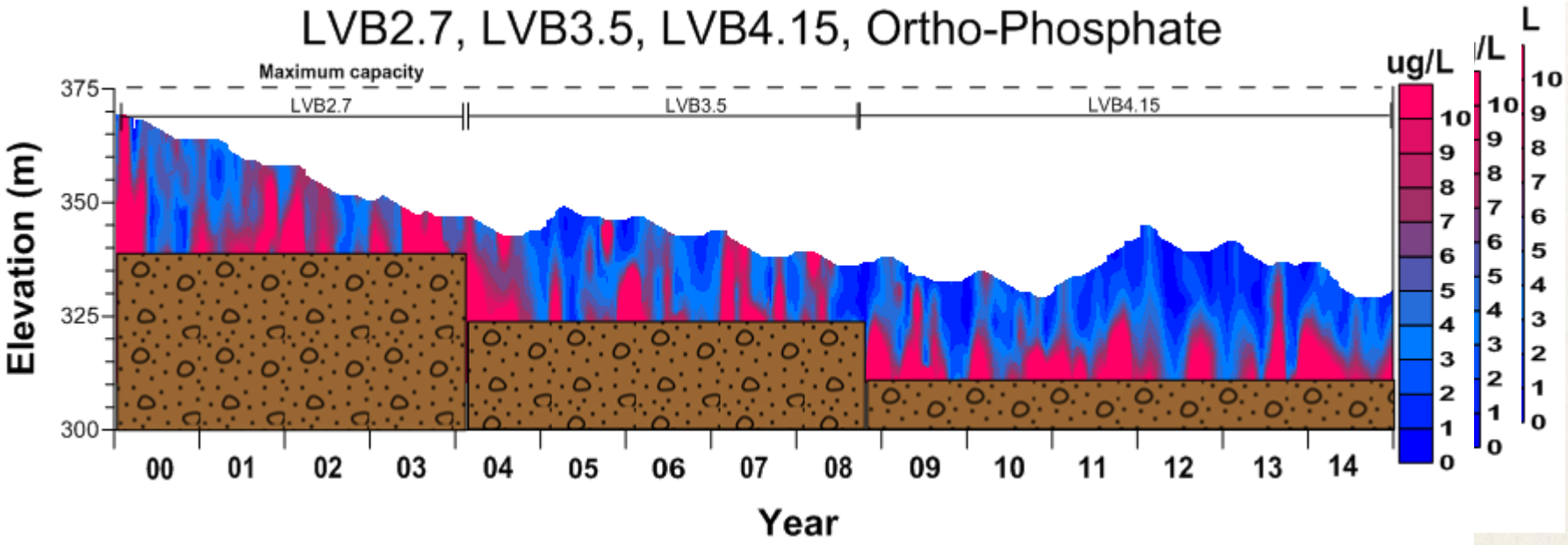
LVB2.7, LVB3.5, LVB4.15, Ortho-Phosphate
Maximum capacity
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LVB3.5
LVB4.15
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The unfortunate first indicator?